

Preservation and Dissemination of an Irreplaceable Teaching Resource through Digital Archiving and Classification

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Funding priority: #4 - Impact and sustainability

Grant type: Teaching and mentoring innovation grant

I. Specific educational aims: Dermatology is a highly visual field of medicine. Given that the organ of interest is readily accessible to both the human eye and image capturing modalities, dermatologists rely on the morphology and distribution of disease processes to complement information gathered from history and diagnostic tests. Much like the way machines learn via processing large datasets, trainees in dermatology benefit from repeated exposure to a wide variety of disease presentations during patient encounters and independent study via textbooks, image atlases or other archived resources. The goal of this project is to digitize, archive, and classify an irreplaceable collection of ~5,000 24 x 36 mm Kodachrome slides containing clinical images curated over a 40+ year career in dermatology practice recently donated to the Stanford Dermatology Residency Program. This will help meet the education aim of expanding access to digital Kodachrome images for both Stanford residents and trainees in the broader community.

II. Project rationale: “We need more Kodachromes.” For current and former resident physicians in dermatology, this is a familiar lament. The name is derived from the brand name of a type of film introduced by Eastman Kodak in 1935. It has found its way into pop culture through the work of singer/songwriter Paul Simon and the name of a beautiful state park in Utah (Kodachrome Basin State Park). It is also notoriously difficult to scan, warranting professional digitization in order to provide the best product possible. The Stanford Dermatology Residency Program recently received a prodigious and wide-ranging collection of Kodachrome slides from one of our volunteer faculty members as described in section I. This collection contains high quality clinical photographs of varied presentations of common and rare dermatologic diseases.

In its current form, this is a treasured but impractical and constrained teaching resource. Through professional digitization, archival, and classification, however, we can convert this collection into an invaluable teaching and study tool that will be available at no cost to current and future dermatology trainees both at Stanford and in the broader community. This project will help address the oft-lamented deficiency of clinical Kodachromes available both for interactive teaching sessions and independent study. My hypothesis is that there is indeed a significant dissatisfaction among current dermatology residents about the availability of high quality clinical Kodachromes and that the development of a new, expansive collection of readily accessible digital images will improve resident satisfaction in this regard. There is not a substantial body of literature that addresses this topic, but a 1998 study from the UT Southwestern Department of Dermatology implemented, among other tools, digitized Kodachromes for teaching medical students and demonstrated that the teaching mechanisms deemed by students to be most effective were also the most visual and interactive [1].

III. Approach: A large collection of ~5,000 24 x 36 mm Kodachrome slides will be submitted to a professional slide scanning service (e.g. Costco Photo Center, FotoBridge, DigMyPics, ScanMyPhotos International) for high quality digitization. Each Kodachrome slide contains the equivalent of approximately 140 megapixels of data in each image and can be scanned at a resolution of up to 4,000 dpi. Digital Kodachromes will be stored on DVDs and uploaded into a cloud-based

storage service such as Box. We will then design an interactive electronic repository to be used by both mentors and trainees for both teaching and independent study now and far into the future. The images will be de-identified to protect patient privacy and classified by disease groups for easy accessibility and targeted practice. In order to assess the impact of this intervention, current residents will be asked to complete a pre-intervention survey characterizing their current thoughts about the role of Kodachrome-based teaching and study in their training thus far. After this tool is made available to our residents, a post-intervention study will be distributed to assess whether or not the availability of this new resource has made a meaningful and measurable difference. Incentives for completing the surveys will be made available in the form of small value gift cards if the budget allows for it. Regardless of the outcome, it will be heartening to know that we were able to preserve an important source of real-world clinical images that may have otherwise gone to waste.

IV. Timeline and plan for implementation:

October 2017 – Create pre-intervention surveys. Use a small subset of Kodachromes to be digitized by several different digitization services in order to assess quality compared to price.

November 2017 – Distribute pre-intervention surveys. Choose a digitization service for the whole collection based on quality and price comparisons discussed above. Submit slides for digitization.

December 2017 - April 2018 – Design a de-identified repository for digital Kodachrome images and make available to Stanford dermatology residents and faculty.

May - July 2018 – Design and distribute post-intervention surveys. Analyze survey responses and present findings internally and externally.

V. Anticipated work product: The vast majority of the modest funding requested for this project will be used to pay for professional digitization of the donated Kodachrome slides. Once the slides are digitized, they can be shared broadly for a multitude of purposes, ranging from independent or peer-to-peer studying to faculty-led teaching sessions. In addition to enabling the creation of a tangible, sustainable and high-impact resource that will last far beyond the funding period, the grant funds will enhance the quantity and quality of Kodachrome-based study materials available to dermatology trainees. This will positively address the relative deficiency in this important learning device that I hypothesize exists within our own training program and others around the country and world.

VI. Evaluation plan: Analysis of pre- and post-intervention surveys will allow us to determine if the addition of this large collection of digital Kodachromes benefits our trainees. Regardless of the outcome of this analysis, however, an irreplaceable but difficult to access and finite resource will have been converted to one that is easily accessible, sustainable and sharable.

VII. Dissemination of results: Results of this work will be submitted for consideration at a regional or national dermatology meeting and will be submitted for publication in a peer-reviewed journal. If not accepted in either of these contexts, the results could also be shared via a dermatology newsletter such as *Dermatology World*.

1. Hartmann AC, Cruz, Jr PD. Interactive Mechanisms for Teaching Dermatology to Medical Students. *Arch Dermatol*. 1998;134(6):725–728. doi:10.1001/archderm.134.6.725

VIII. Budget and justification:

| | Item | Justification | Amount |
|-------------------------|--|---|---------------|
| Compensation | none | | |
| | | Total compensation: | \$0 |
| Non-compensation | | | |
| | Professional digitization of 24 x 36 mm slides x 5,000 | Required to convert analog slides into shareable, readily accessible, digital format | \$2250 |
| | 50 gift cards x \$5 each | Gift cards to incentivize pre- and post-intervention survey participation | \$250 |
| | 1 stipend x \$1000 | Stipend for student to assist with design and implementation of interactive electronic repository | \$1000 |
| | | Total non-comp: | \$3500 |
| | | Total request: | \$3500 |